

# Further notes on little-known plumages of the Crested and Loria's Birds of Paradise *Cnemophilus macgregorii* and *C. loriae*

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The congeneric Crested and Loria's Birds of Paradise *Cnemophilus macgregorii* and *C. loriae* are two conspicuously sexually dimorphic species of the three constituting the subfamily Cnemophilinae of the Paradisaeidae, confined to mountains of New Guinea. The third species is the Yellow-breasted Bird of Paradise *Loboparadisea sericea*. For details of adult male and female plumages, geographical distributions and altitudinal ranges see Gilliard (1969), Cooper & Forshaw (1977) and Beehler *et al.* (1986).

Adult female and immature male plumages of the two *Cnemophilus* species were long known to be generally uniform brownish-olive (*C. macgregorii*) and greenish-olive (*C. loriae*), until a grey plumage was discovered in a few specimens of each species the significance of which was and presently remains difficult to assess (Frith 1987, Frith & Harrison 1989).

An advanced nestling Crested Bird of Paradise photographed at the nest with its mother was clearly in a uniform grey plumage contrasting conspicuously with its brownish-olive parent (Frith, in Coates 1990), suggesting the possibility of a distinctive juvenile plumage in this species. A specimen collected at Mt. Hagen and described as juvenile (Gilliard 1954) has a short wing and is in a generally grey-green plumage with downy underparts and with the tail feathers obviously pointed at their tips. As the Yellow-breasted Bird of Paradise has distinctive juvenile plumage (which all typical birds of paradise, of the Paradisaeinae, do not) it was considered possible that all three member species of the Cnemophilinae have a juvenile plumage different to that of their respective adults (Frith & Harrison 1989).

The 'grey' plumage of an unsexed specimen (19.9.1963) identified as a Crested Bird of Paradise *C. macgregorii* was first noted by me in 1971 as a result of a casual examination of birds of paradise in the Alexander Koenig Museum, Bonn, Germany. I was unable to personally re-examine this specimen but C. J. O. Harrison did so at the Natural History Museum, Tring, in 1988 and the 'grey' plumage of this specimen was attributed to *C. macgregorii* (Frith & Harrison 1989). Female-plumaged individuals of *C. macgregorii* and *C. loriae* are extremely similar. A live bird and a photograph of it was misidentified by no less an authority on the birds of paradise than Fred Shaw-Mayer (in Gyldenstolpe 1955 and Sims 1956), but this error was subsequently pointed out by E. Thomas Gilliard and Ernst Mayr and corrected in a subsequent book by the photographer (Loke 1957). Nevertheless female-plumaged birds of both species are sufficiently different to be identified in the hand by workers specializing in the group.

In 1995 I made a study tour of the majority of all major bird of paradise collections about the world and was able to examine 138 specimens of *C. macgregorii*, comprising 62 adult males, 12 subadult males (some adult feathering in otherwise brownish-olive female-like plumage), 24 immature males (in female plumage), 34 females and 6 unsexed birds in female plumage. A total of 268 *C. loriae* specimens was examined, comprising 118 adult males, 24 subadult males (some adult black feathering in otherwise green female-like plumage), 37 immature males (in female plumage), 83 females and 6 unsexed birds in female plumage. The results were as follows.

### *Cnemophilus macgregorii*

When the Alexander Koenig Museum specimen 19.9.1963 from Wurup, Kubor Range, identified as *C. macgregorii* was re-examined, it was immediately apparent that it is not *C. macgregorii* but is in fact a specimen of *C. loriae*.

The grey-plumaged Alexander Koenig Museum specimen 29.12.1963 from Tomba, Mt. Hagen, was also re-examined and confirmed to be *C. macgregorii*, as described by Frith & Harrison (1989). In view of the mis-identification just mentioned it was in fact, then, the only specimen of this species known in any plumage other than that of the normal adult male and female/immature male plumage. During recent studies of extensive *C. macgregorii* material two additional interesting specimens were examined. In describing these two specimens the capitalised names (and numbers) of colours used are those of Smithe (1975) and uncapitalised colour names are used if those of Smithe are considered inappropriate.

Crested Bird of Paradise *C. macgregorii* specimen P15, 183/3 and/or 66.2 of the Zoological Museum of Hamburg, Germany, was collected by D. v. Holst in December 1963 at "Waghi-Tal, NO New Guinea etwa 5,50°S, 144,15°O". It is said by the preparator to be an adult female and it is in a most interesting plumage: Chin, throat and breast a smoky greyish-brown very like Grayish Horn Color (91) with darker feather tipping giving a faint scaled appearance. Remaining underparts distinctly paler, being closest to Drab-Gray (119D) but washed in places, and much so on the flanks, with Grayish Horn Color. Thigh feathering Grayish Horn Color with a rufous wash to it. Top of head Dark Brownish Olive (129) and lores and sides of head Brownish Olive (29). The mantle is Dark Brownish Olive with slight and variable deep russet and olive washes, and the back, rump and upper tail are Russet (34) with variable olive suffusion, the feather centres being more pure Russet. Visible closed wings are mostly Russet with a rich Chestnut (32) wash, notably on leading edges of inner primaries and the secondaries. Crest feathers are Maroon (31). Thus this bird, apparently an adult female, is not in a truly grey plumage but is generally fawn below and russet-olive above. Its upperparts are therefore not very different from normally female-plumaged birds.

The Hamburg bird and the Alexander Koenig Museum specimen 29.12.1963 were examined together at Tring. The Hamburg specimen is generally like the Bonn one but is a good deal browner (rather than

grey) throughout, especially on all upperparts and the chin, throat, breast and flanks.

In addition a mounted unsexed specimen of *C. macgregorii* (CG 1898 1381) in the Muséum National d'Histoire Naturelle, Paris, collection from "Astrolabe" (Astrolabe Mountains, Papua New Guinea) was examined and found to be in an interesting 'fawn' plumage similar to that of the Hamburg specimen. This Paris specimen could not be examined comparatively with other pertinent specimens but judging from photographs taken of both it is perhaps a little darker and browner throughout than the Hamburg specimen.

### *Cnemophilus loriae*

Given that specimen 19.9.1963 of the Alexander Koenig Museum is not *C. macgregorii* as described by Frith & Harrison (1989) but is in fact *C. loriae*, the completely grey plumage in *C. loriae* was, then, known in two specimens, the other being specimen 0547 from the collection at the Baiyer River Sanctuary in Papua New Guinea. Two specimens were also known in intermediate plumage between the normal 'green' female and the 'grey' (Papua New Guinea Museum 20743 & 20773) (Frith 1987). Unfortunately the Baiyer River Sanctuary specimen was recently destroyed by fire, along with all other bird skins held there, leaving the Alexander Koenig Museum specimen 19.9.1963 the only one in the complete 'grey' plumage.

In the course of my studies, however, I discovered two additional *C. loriae* specimens in interesting plumage. Skin P15, 182/2 and/or 66.3 in the Zoological Museum Hamburg was collected at "Bulldog/Lake Kamu River etwa 7,35°S, 146,30°O" by D. v. Holst on 20 July 1963. It has a single blue-black feather in the rear crown and is therefore clearly a male that would have presumably acquired subadult plumage with its next moult. As males of most sexually dimorphic birds of paradise appear to take five or more years to acquire the first signs of adult plumage (Aruah & Yaga 1992), this individual is probably at least four to five years old. It is in a plumage intermediate between the normal 'green' female and the 'grey' plumage. It is not, however, 'grey' with some green feathers, as previously described for another specimen (Frith 1987), but the overall plumage (i.e. each feather) is intermediate in colour: Underparts far less green than in typical female-plumaged *C. loriae*, the chin, throat and breast being Grayish Olive (43) with darker, Olive (30), tipping to feathers giving a marked scaled appearance. The abdomen and belly are considerably paler, being Smoke Gray (44), darker in places with a wash of Grayish Olive and a slight yellowish wash lowermost and centrally. Flanks darker, being strongly washed with Grayish Olive. Thigh feathering pale Olive-brown (28). Top and sides of head darker than chin and throat, being Brownish Olive (29) with darker feather tipping, almost blackish-grey, giving a scaled appearance. Back and rump Olive with the centres of larger mantle and back feathers strongly over-pigmented with Olive-Brown to give a grossly scalloped appearance. Upper tail Olive-Brown with strong Raw Umber (23) wash and the visible closed wing predominantly Raw Umber to dark Raw Umber. In general this



bird looks more like the 'grey' plumage of *C. loriae* than the typical 'green' female plumage.

The second specimen in interesting plumage was Natuurhistorisch Museum, Leiden specimen 19100, a male, collected at Araboebivak on 4 November 1939. It is juvenile to immature in age and is in a plumage much greyer than that typical of adult females and female-plumaged young males. It is a mid-grey colour throughout, save for rufous leading edges to wing primaries and a slight rufous wash on the upper tail. It is darker on the back, which is closest to, but darker than, Glaucous (79). Underparts are closest to Smoke Gray, being darker on the chin, throat and upper breast.

### Conclusions

Of the three members of the *Cnemophilinae*, *L. sericea* has a juvenile olive-brown plumage with cinnamon (123A) underparts broadly streaked by darker feather edging that is distinctly different to its adult plumages. *Cnemophilus macgregorii*, and probably also *C. loriae*, has a generally uniform grey juvenile plumage that may persist as immature plumage in some populations or in some individuals of some populations. Some individuals of *C. loriae* are, moreover, known in which the plumage is intermediate between the normal, generally 'green' plumage of females and immature males and the recently described 'grey' plumage. Such birds may have some grey feathers among the green ones or may have the whole plumage intermediate in colour.

In *C. macgregorii* two specimens are known in a different plumage, one being generally fawn but with some upperparts washed brown-olive or olive, and the other a slightly darker fawn throughout. The significance of the 'grey' plumages in both *Cnemophilus* species, and particularly of the fawn ones in *C. macgregorii*, remains inadequately understood.

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## Sexual dimorphism in the Javan Hawk-eagle *Spizaetus bartelsi*

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The Javan Hawk-eagle *Spizaetus bartelsi* is considered to be one of the world's least known raptors (van Balen & Meyburg 1994). It is endemic to the island of Java, Indonesia, where it is confined to the lowland and montane forest areas. Although in the last few years new information has been accumulated on its distribution and status (van Balen & Meyburg 1994, Sözer & Nijman 1995b) and some data have been added to our knowledge of aspects of its behaviour (van Balen *et al.* 1994, Nijman & Sözer 1995a), the knowledge we have of the species remains limited. Very little is known about demography and population dynamics, as is the case with many other rain-forest raptors (*cf.* Thiollay 1994). The total number of breeding pairs throughout the island is estimated at between 81 and 108 (Sözer & Nijman 1995a). By virtue of this low number, continuing habitat loss and trade the species is considered to be endangered according to the IUCN threat criteria (Collar *et al.* 1994).

Birds of prey are amongst the few groups of birds in which reversed size dimorphism has evolved, the female being larger than the male. The size differences in some species may be slight and barely noticeable, while in others the female may weigh almost twice as much as her mate (e.g. European sparrowhawk *Accipiter nisus*; Opdam 1975). This degree of size difference between the sexes is also linked to